Application No. 09/554,414 Reply to Office Action March 21, 2006

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-31. (canceled)

- 32. (currently amended) A method of altering a demethylation activity of DNA demethylase in [[a]] an isolated human cell comprising amino acids 150-411 of SEQ ID NO:2, the method comprising inhibiting DNA demethylase with an antagonist selected from the group consisting of a double stranded C^mG oligonucleotide, an anti-DNA demethylase antibody, antisense oligonucleotide of DNA demethylase, and imidazole, wherein said DNA demethylase comprises amino acids 150-411 of SEQ ID NO:2.
- 33. (previously presented) The method according to claim 32, wherein said antagonist is a double stranded C^mG oligonucleotide that inhibits DNA demethylase at a Ki of 50nM.
- 34. (previously presented) The method according to claim 33, wherein said oligonucleotide is

$$\left\{ \begin{array}{l} C^mG C^mG C^mG C^mG \end{array} \right\}_n .$$

35-40. (canceled)

- 41. (previously presented) The method according to claim 32, wherein said antagonist is an anti-DNA demethylase antibody.
- 42. (previously presented) The method according to claim 32, wherein said antagonist is an antisense oligonucleotide of DNA demethylase.
- 43. (previously presented) The method according to claim 32, wherein said antagonist is imidazole.
- 44. (canceled)